PATENT COOPERATION TREATY

From the INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:
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PCT

# NOTIFICATION OF TRANSMITTAL OF INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

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|---|---|
| Date of Mailing (day/month/year) | 26 OCT 2004 |
| Applicant's or agent's file reference: 220148 WO | IMPORTANT NOTIFICATION |
| International application No.: PCT/US03/26302 | International filing date (day/month/year): 22 September 2003 (22.09.2003) |
| Priority date (day/month/year): 19 September 2002 (19.09.2002) | |
| Applicant: TOKYO ELECTRON LIMITED | |

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

| | |
|---|---|
| Name and mailing address of the IPEA/US<br>Mail Stop PCT, Attn: IPEA/US<br>Commissioner for Patents<br>P.O. Box 1450<br>Alexandria, Virginia 22313-1450<br>Facsimile No. (703) 305-3230 | Authorized officer<br>Luz L. Alejandro<br>Telephone No. 703-308-0661 |

Form PCT/IPEA/416 (July 1992)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US03/26302

## I. Basis of the report

1. With regard to the elements of the international application:*

☒ the international application as originally filed.

☒ the description:
pages 1-13 as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

☒ the claims:
pages 14-19, as originally filed
pages NONE, as amended (together with any statement) under Article 19
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

☒ the drawings:
pages 1-9, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

☐ the sequence listing part of the description:
pages NONE, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination(under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in printed form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

☒ the description, pages NONE

☒ the claims, Nos. NONE

☒ the drawings, sheets/~~fig~~ NONE

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

** Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*
*** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US03/26302

**V. Reasoned statement under R[redacted]6.2(a)(ii) with regard to novelty, inventive st[redacted]ndustrial applicability; citations and explanations supporting such statement**

1. STATEMENT

| | | |
|---|---|---|
| Novelty (N) | Claims 5-7,16-20,25-27,29-31 and 33 | YES |
| | Claims 1-4, 8-15, 21-24, 28, 32 | NO |
| Inventive Step (IS) | Claims NONE | YES |
| | Claims 1-33 | NO |
| Industrial Applicability (IA) | Claims 1-33 | YES |
| | Claims NONE | NO |

2. CITATIONS AND EXPLANATIONS
Please See Continuation Sheet

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Claims 1-4, 8-15, 21-24, 28 and 32 lack novelty under PCT Article 33(2) as being anticipated by Koshimizu, U.S. Patent 5,290,383.

Koshimizu shows the invention as claimed including process chamber comprising a viewing port coupled to the process chamber, wherein the viewing port comprises: a viewing window to permit optical access to the process chamber; a mounting to couple the viewing window to the process chamber; and a viewing window cleaning apparatus, comprising a RF source and an inductive coil as a plasma source, coupled to the mounting and disposed between the viewing window and the process chamber, and configured to form a cleaning plasma in a cleaning plasma region of the mounting; wherein the viewing window cleaning apparatus further comprises an impedance match assembly and a plasma generator; a gas injection system is coupled to the cleaning plasma region; and wherein the supporting section of the viewing window is configured to position the viewing window at a predetermined position relative to a position of the process chamber. For a complete description of the apparatus see fig. 26 and its description.

With respect to claims 9-14, note that the cleaning plasma etches by-products deposited on the viewing window through physical/chemical etching. Furthermore, the claims are directed to method limitations instead of apparatus limitations and since an apparatus is being claimed as the instant invention to method teachings are not considered to be the matter at hand, since a variety of methods can be done with the apparatus. The method limitations are viewed as intended uses which do not further limit, and therefore, do not patentably distinguish the claimed invention.

Regarding claims 28 and 32, Koshimizu discloses the claimed method of cleaning a viewing window for a process chamber.

Claims 5-7, 18-20, 25-27 and 29 lack an inventive step under PCT Article 33(3) as being obvious over Koshimizu, U.S. Patent 5,290,383 in view of Masuda et al., U.S. Patent 6,503,364 or Masuda et al., JP 2001-77092A.

Koshimizu is applied as above but does not expressly discloses an apparatus further comprising at least one array of magnets coupled to the mounting. Masuda et al. (both '364 and '092) discloses an apparatus comprising a viewing window having a mounting couple to it and further comprising an array of magnets for suppressing adhesion of deposits onto the window (see, for example, figs. 1-3 and their description, especially col. 8, lines 13-33). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Koshimizu by further comprising an array of magnets in order to suppress adhesion of deposits in the window.

Claims 17 and 30 lack an inventive step under PCT Article 33(3) as being obvious over Koshimizu, U.S. Patent 5,290,383 in view of Chen et al., U.S. Patent 6,071,375 or Melvin et al., U.S. Patent 6,306,246.

Koshimizu is applied as above but does not expressly disclose wherein the gas injection system is configured to flow a gas into the cleaning plasma region so that a pressure is generated in the cleaning plasma region, the pressure substantially opposing a propagating direction of by-products. Chen et al. discloses an apparatus in which a gas injection system is configured to flow a gas into the a cleaning plasma region, around a viewing window, so that a pressure is generated in the cleaning plasma region, the pressure substantially opposing a propagating direction of by-products in order to avoid the accumulation of by-products particulates or other contaminants (see, for example, figs. 1-3, and col. 3-line 19 to col. 5-line 60). Additionally, Melvin et al. discloses an

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

apparatus in which a gas injection system is configured to flow a gas into the a cleaning plasma region, around a viewing window, so that a pressure is generated in the cleaning plasma region, the pressure substantially opposing a propagating direction of by-products in order to avoid the accumulation of by-products particulates or other contaminants (see, for example, figs. 2-4, and their descriptions). Therefore, in view of these disclosures, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Koshimizu as to comprise the a gas injection system configured to flow a gas into the cleaning plasma region so that a pressure is generated in the cleaning plasma region, the pressure substantially opposing a propagating direction of by-products in order to avoid the accumulation of by-products particulates or other contaminants.

Claims 16, 31 and 33 lack an inventive step under PCT Article 33(3) as being obvious over Koshimizu, U.S. Patent 5,290,383.

Koshimizu is applied as above but does not expressly disclose that the predetermined position in which the viewing window is positioned relative to the position of the chamber is selected so that a substantial amount of by-products do not travel to the viewing window. However, the it would have been an obvious choice of design to one of ordinary skill in the art to optimize the location/position of the viewing window relative to the process chamber during routine experimentation depending upon, for example, the amount of by-products avoided, and would not lend patentability to the instant application absent the showing of unexpected results.

Furthemore, Koshimizu does not expressly disclose etching the by-products using the specific claimed gases, however, the incorporation/use of such claimed gases in the teachings of the Koshimizu reference would have been obvious to one having ordinary skill in the art at the time the invention was made because such claimed gases are well know and used in the art as suitable etching gases.

---------- NEW CITATIONS ----------